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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/825,800

04/14/2004

Darrin Leonhardt

N.C. 95,876

1602

26384

7590

06/23/2006

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EXAMINER

MCDONALD, RODNEY GLENN

ART UNIT

PAPER NUMBER

1753

DATE MAILED: 06/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/825,800

Applicant(s)

LEONHARDT ET AL.

Examiner

Rodney G. McDonald

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 5-10-06.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 13, 2006 has been entered.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-7 and 19-25 are rejected under 35 U.S.C. 102(b) as being anticipated by ***Theoretical overview of the large-area plasma processing system (LAPPS)*** by Manheimer et al. (Manheimer).

Regarding the use of the phrase “consisting essentially of” as it pertains to this rejection, MPEP 2111.03 states:

“For the purposes of searching for and applying prior art under 35 U.S.C. 102 and 103, absent a clear indication in the specification or claims of what the basic and novel characteristics actually are, “consisting essentially of” will be construed as equivalent to “comprising.” See, e.g., PPG, 156 F.3d at 1355, 48 USPQ2d at 1355 (“PPG could have defined the scope of the phrase consisting essentially of” for purposes of its patent by making clear in its specification what it

regarded as constituting a material change in the basic and novel characteristics of the invention.”). See also *AK Steel Corp. v. Sollac*, 344 F.3d 1234, 1240-41, 68 USPQ2d 1280, 1283-84 (Fed. Cir. 2003) (Applicant’s statement in the specification that “silicon contents in the coating metal should not exceed about 0.5% by weight” along with a discussion of the deleterious effects of silicon provided basis to conclude that silicon in excess of 0.5% by weight would materially alter the basic and novel properties of the invention. Thus, “consisting essentially of” as recited in the preamble was interpreted to permit no more than 0.5% by weight of silicon in the aluminum coating.); In re *Janakirama-Rao*, 317 F.2d 951, 954, 137 USPQ 893, 895-96 (CCPA 1963). If an applicant contends that additional steps or materials in the prior art are excluded by the recitation of “consisting essentially of,” applicant has the burden of showing that the introduction of additional steps or components would materially change the characteristics of applicant’s invention. In re *De Lajarte*, 337 F.2d 870, 143 USPQ 256 (CCPA 1964). See also *Ex parte Hoffman*, 12 USPQ2d 1061, 1063-64 (Bd. Pat. App. & Inter. 1989) (“Although consisting essentially of” is typically used and defined in the context of compositions of matter, we find nothing intrinsically wrong with the use of such language as a modifier of method steps. . . [rendering] the claim open only for the inclusion of steps which do not materially affect the basic and novel characteristics of the claimed method. To determine the steps included versus excluded the claim must be read in light of the specification. . . . [I]t is an applicant’s burden to establish that a step practiced in a prior art method is excluded from his claims by consisting essentially of language.”).

There is no clear indication that the magnetic field should be excluded when applying the prior art. The magnetic field does not materially effect the invention. Applicant’s specification on page 9 paragraph 0016 state that in a **“preferred embodiment”** a magnetic field 4 is utilized for their invention. This is

not a clear indication that the claim should be interpreted to exclude the use of a magnetic field. Furthermore, page 13 paragraph 0022 states “without the beam-collimating magnetic field. In such an arrangement, ***the electron beam is directed at the substrate*** and can be produced using the same electron beam source”. Thus in this instance where no magnetic field is utilized there cannot be a separation between the plasma sheet and the substrate as required by the claims since the electron beam passes over the substrate creating the plasma and would not be directed at the substrate.

3. For claim 1, Applicant requires a large area metallization pretreatment and surface activation system consisting essentially of a gas or gas mixture; an electron beam source; a low electron plasma of pre-determined width, length, thickness, and location relative to a surface, wherein the plasma sheet is produced by the electrode beam passing through the gas or gas mixture; a substrate to be treated; wherein the radical and ion flux from the plasma is controlled to chemically and physically alter the surface of the substrate thereby improving the ability of a film to adhere to the substrate; wherein the radical and ion flux from the plasma is controlled by selecting an appropriate gas mixture based on the desired surface pretreatment and by altering the separation between the plasma sheet and the substrate.

4. For claim 19, Applicant requires a method of producing a chemically active surface to improve the ability of a film to adhere to a substrate, consisting essentially of the steps of producing a low electron plasma of pre-determined width, length, thickness, and location relative to a surface by passing an electron beam through a gas or gas

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mixture; and controlling the radical and ion flux from the plasma to chemically and physically alter the surface of a substrate thereby improving the ability of a film to adhere to the substrate; wherein the radical and ion flux from the plasma is controlled by selecting an appropriate gas mixture based on the desired surface pretreatment and by altering the separation between the plasma and the substrate.

5. Manheimer discloses a LAPPS system comprising a sheet electron beam (abstract), gas for a plasma (abstract), formed plasma (abstract), and substrate (abstract). The surface of the substrate is altered by the radical and ion flux and are controlled based upon the desired pretreatment (abstract).

6. For claims 2 and 20, Applicant requires the width to be much larger than the thickness of the beam. The beam is a sheet beam and inherently larger in width than thickness (abstract).

7. For claims 3 and 21, Applicant requires confining the electron beam. Manheimer discloses applying a longitudinal magnetic field (pg. 372).

8. For claims 4 and 22, Applicant requires the position of the beam, plasma and substrate to be adjustable. Because the substrate can be rotated or mobbed on a continuous feed belt (pg. 372), it is adjustable.

9. For claims 5 and 23, Applicant requires the substrate to be electrically biased. A DC bias is applied to the substrate (pg. 371).

10. For claims 6 and 24, Applicant requires the gas to comprise at least one molecular gas. Manheimer uses oxygen (pg. 371).

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11. For claims 7 and 25, Applicant requires roll-to-roll spools to feed the substrate. Manheimer uses a continuous feed belt (pg. 372) and hence discloses the limitations.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 8-14, 16-18, 26-32, and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over ***Theoretical overview of the large-area plasma processing system (LAPPS)*** by Manheimer et al. (Manheimer) in view of US 5,089,066 to Hamada et al. (Hamada).

14. Manheimer is discussed above and all is as applies above.

15. For claims 8 and 26, Applicant requires providing a second gas and a target wherein the plasma is used with the second gas to sputter material from the target and deposit as a thin film onto the substrate.

16. For claims 14 and 32, Applicant requires conventional plasma vapor depositing onto the substrate with the material generated by sputtering means or vaporization means.

17. Manheimer is described above, but does not disclose depositing a layer onto the pretreated substrate. Manheimer does, however, indicate that the pretreatment is to be used before conventional plasma processing such as etching or deposition (pg. 370).

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18. Hamada discloses various deposition techniques that can be used after a substrate is pretreated include sputtering, CVD, or other deposition techniques. The sputtering involves providing a sputtering target that is biased and sputtering in an argon gas (col. 6, l. 57-68).

19. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Manheimer to utilize sputtering or CVD as deposition techniques after the plasma pretreatment because of the knowledge that such deposition techniques are conventional after pretreatment.

20. For claims 9 and 27, Applicant requires the target to be biased above a sputtering threshold. The limitation is inherent in Hamada because otherwise, the target could not be sputtered and emit atoms.

21. For claims 10, 17, 28, and 35, Applicant requires the electron beam and plasma to be located between the target and substrate. The limitations are inherent because if the plasma were above the target or under the substrate, there could be no deposition. Regarding the electron beam, if it were not between the target and substrate, then the target or substrate would block its path to the substrate.

22. For claims 11, 18, 29, and 36, Applicant requires the position of the beam, plasma, target, and substrate to be adjustable. Because the substrate moves on a roll to roll system, it is adjustable.

23. For claims 12 and 30, Applicant requires the second gas to be atomic or molecular or a mixture. Argon is used in Hamada and hence, the limitation is met.

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24. For claims 13 and 31, Applicant requires a roll-to-roll spool to feed the substrate.

As noted above, Manheimer discloses the limitation.

25. For claims 16 and 34, Applicant requires the vaporization means to be electron beams, lasers or thermal sources. Hamada discloses using an electron gun or resistance heating to deposit (col. 7, l. 1-20).

26. Claims 15 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over ***Theoretical overview of the large-area plasma processing system (LAPPS)*** by Manheimer et al. (Manheimer) in view of US 5,089,066 to Hamada et al. (Hamada) as applied to claims 14 and 32 above, and further in view of US 5,178,739 to Barnes et al. (Barnes).

27. For claims 15 and 33, Applicant requires the sputtering means to be magnetrons or ion beams.

28. Manheimer in view of Hamada is described above, but the sputtering means being magnetrons is not described.

29. Barnes discloses that when sputtering, it is beneficial to have magnets behind the sputtering target, hence magnetrons, for the purpose of increasing sputtering rate and plasma density (col. 4, l. 16-25).

30. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Manheimer in view of Hamada to utilize magnetrons behind the target because of the desire to increase the sputtering rate.

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31. Claims 1-7 and 19-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over ***Theoretical overview of the large-area plasma processing system (LAPPS)*** by Manheimer et al. (Manheimer) in view of Collins et al. (U.S. Pat. 4,509,451).

32. Regarding the phrase “consisting essentially of” as it pertains to this rejection, assuming arguendo that the magnetic field is excluded by the phrase “consisting essentially of” the examiner applies the follow rejection. (and rejections to follow).

33. Manheimer et al. is discussed above and all is applies above.

34. The difference between Manheimer et al. and the present claims is the exclusion of a magnetic field.

35. Manheimer et al. recognize that LAPPS has the disadvantage of requiring a magnetic field to confine the beam and that the magnetic field has little effect on ion transport in the LAPPS. Manheimer et al. recognize a need for beams without this disadvantage. (See Manheimer et al. page 383) Collins et al. teach an electron beam for producing a sheet plasma for treating the substrate. (Column 2 lines 29-68; Column 3 lines 1-32; Column 3 lines 58-63)

36. The motivation for utilizing an electron beam for producing a sheet plasma without a magnetic field is that it allows for creating uniform plasmas with little substrate radiation damage. (Column 1 lines 58-68; Column 2 line 1)

37. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Manheimer et al. by utilizing an electron beam to produce a sheet plasma without a magnetic field as taught by Collins et al. because it allows for creating uniform plasmas with little substrate radiation damage.

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38. Claims 8-14, 16-18, 26-32, and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manheimer et al. in view of Collins et al. as applied to claims 1-7 and 19-25 above, and further in view of Hamada (U.S. Pat. 5,089,066).

39. For claims 8 and 26, Applicant requires providing a second gas and a target wherein the plasma is used with the second gas to sputter material from the target and deposit as a thin film onto the substrate.

40. For claims 14 and 32, Applicant requires conventional plasma vapor depositing onto the substrate with the material generated by sputtering means or vaporization means.

41. Manheimer is described above, but does not disclose depositing a layer onto the pretreated substrate. Manheimer does, however, indicate that the pretreatment is to be used before conventional plasma processing such as etching or deposition (pg. 370).

42. Hamada discloses various deposition techniques that can be used after a substrate is pretreated include sputtering, CVD, or other deposition techniques. The sputtering involves providing a sputtering target that is biased and sputtering in an argon gas (col. 6, l. 57-68).

43. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Manheimer to utilize sputtering or CVD as deposition techniques after the plasma pretreatment because of the knowledge that such deposition techniques are conventional after pretreatment.

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44. For claims 9 and 27, Applicant requires the target to be biased above a sputtering threshold. The limitation is inherent in Hamada because otherwise, the target could not be sputtered and emit atoms.

45. For claims 10, 17, 28, and 35, Applicant requires the electron beam and plasma to be located between the target and substrate. The limitations are inherent because if the plasma were above the target or under the substrate, there could be no deposition. Regarding the electron beam, if it were not between the target and substrate, then the target or substrate would block its path to the substrate.

46. For claims 11, 18, 29, and 36, Applicant requires the position of the beam, plasma, target, and substrate to be adjustable. Because the substrate moves on a roll to roll system, it is adjustable.

47. For claims 12 and 30, Applicant requires the second gas to be atomic or molecular or a mixture. Argon is used in Hamada and hence, the limitation is met.

48. For claims 13 and 31, Applicant requires a roll-to-roll spool to feed the substrate. As noted above, Manheimer discloses the limitation.

49. For claims 16 and 34, Applicant requires the vaporization means to be electron beams, lasers or thermal sources. Hamada discloses using an electron gun or resistance heating to deposit (col. 7, l. 1-20).

50. Claims 15 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manheimer et al. in view of Collins et al. and further in view of Hamada as applied to claims 1-14, 16-32 and 34-36 above, and further in view of Barnes et al. (U.S. Pat. 5,178,739).

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51. For claims 15 and 33, Applicant requires the sputtering means to be magnetrons or ion beams.

52. Manheimer in view of Collins and further in view of Hamada is described above, but the sputtering means being magnetrons is not described.

53. Barnes discloses that when sputtering, it is beneficial to have magnets behind the sputtering target, hence magnetrons, for the purpose of increasing sputtering rate and plasma density (col. 4, l. 16-25).

54. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Manheimer in view of Collins and further in view of Hamada to utilize magnetrons behind the target because of the desire to increase the sputtering rate.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

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Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 8-13 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims of U.S. Patent No. in view of.

55. Claims 8-13 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-15 of copending Application No. 10/644,567 in view of ***Theoretical overview of the large-area plasma processing system (LAPPS)*** by Manheimer et al. (Manheimer).

Claims 1-15 of '567 teach the Applicant's required sputtering system. (See Claims 1-15)

The difference between claims 1-15 of '567 is that utilizing the apparatus for pretreatment is not discussed.

Manheimer et al. discussed above teach the use of such a system for pretreatment. (See Manheimer et al. discussed above)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified 10/644,567 by incorporating the pretreatment features of Manheimer et al. because it allows for large area plasma processing.

This is a provisional obviousness-type double patenting rejection.

Response to Arguments

Applicant's arguments filed 4-13-06 have been fully considered but they are not persuasive.

In response to the argument that Manheimer's theoretical system does not suggest the larger area system or method for large area metallization pretreatment and surface activation, it is argued that Manheimer's teaching shows a system in Figure 1 capable of controlling the ion and free radical bombardment of a substrate in a large area. Such treatment could include pretreatment before conventional plasma processing such etching. Clearly the system of Figure 1 which is not a theoretical system and has been utilized by Manheimer suggest Applicant's system. (See Manheimer discussed above)

In response to the argument that the currently claimed invention does not require a magnetic field and the Manheimer reference specifically does require a magnetic field, it is argued that the claims as written are open to utilization of a magnetic field. Specifically the use of the phrase "consisting essentially of" is construed as being equivalent to "comprising" since there is no clear indication that the magnetic field should be excluded when applying the prior art. The magnetic field does not materially effect the invention. Applicant's specification on page 9 paragraph 0016 state that in a ***"preferred embodiment"*** a magnetic field 4 is utilized for their invention. This is not a clear indication that the claim should be interpreted to exclude the use of a magnetic field. Even in Applicant's response it is noted that a magnetic field can be used in some embodiments. Furthermore, page 13 paragraph 0022 states

"without the beam-collimating magnetic field. In such an arrangement, ***the electron beam is directed at the substrate*** and can be produced using the same electron beam source".

Thus in this instance where no magnetic field is utilized there cannot be a separation between the plasma sheet and the substrate as required by the claims since the electron beam passes over the substrate creating the plasma and would not be "directed at the substrate" without the magnetic field as stated on page 13 paragraph 0022. Further MPEP 2111.03 states:

"For the purposes of searching for and applying prior art under 35 U.S.C. 102 and 103, absent a clear indication in the specification or claims of what the basic and novel characteristics actually are, "consisting essentially of" will be construed as equivalent to "comprising." See, e.g., PPG, 156 F.3d at 1355, 48 USPQ2d at 1355 ("PPG could have defined the scope of the phrase consisting essentially of for purposes of its patent by making clear in its specification what it regarded as constituting a material change in the basic and novel characteristics of the invention."). See also AK Steel Corp. v. Sollac, 344 F.3d 1234, 1240-41, 68 USPQ2d 1280, 1283-84 (Fed. Cir. 2003) (Applicant's statement in the specification that "silicon contents in the coating metal should not exceed about 0.5% by weight" along with a discussion of the deleterious effects of silicon provided basis to conclude that silicon in excess of 0.5% by weight would materially alter the basic and novel properties of the invention. Thus, "consisting essentially of" as recited in the preamble was interpreted to permit no more than 0.5% by weight of silicon in the aluminum coating.); In re Janakirama-Rao, 317 F.2d 951, 954, 137 USPQ 893, 895-96 (CCPA 1963). If an applicant contends that additional steps or materials in the prior art are excluded by the recitation of "consisting essentially of," applicant has the burden of showing that the introduction of additional steps or components would materially change the characteristics of applicant's invention. In re De Lajarte, 337 F.2d 870, 143 USPQ 256 (CCPA 1964). See also Ex parte Hoffman, 12 USPQ2d 1061, 1063-64 (Bd.

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Pat. App. & Inter. 1989) ("Although consisting essentially of is typically used and defined in the context of compositions of matter, we find nothing intrinsically wrong with the use of such language as a modifier of method steps. . . [rendering] the claim open only for the inclusion of steps which do not materially affect the basic and novel characteristics of the claimed method. To determine the steps included versus excluded the claim must be read in light of the specification. . . . [I]t is an applicant's burden to establish that a step practiced in a prior art method is excluded from his claims by consisting essentially of language.").

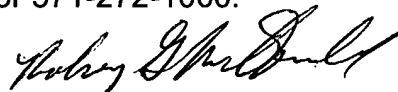
Assuming arguendo that the claims are to be interpreted to exclude the magnetic field, Collins et al. is cited to show an electron beam for producing a sheet plasma without the magnetic field. Manheimer et al. recognize that LAPPS has the disadvantage of requiring a magnetic field to confine the beam and that the magnetic field has little effect on ion transport in the LAPPS. Manheimer et al. recognize a need for beams without this disadvantage. (See Manheimer et al. page 383) Therefore, it would be obvious to replace the plasma generating means of Manheimer with the plasma generating means of Collins et al. because of the disadvantages noted by Manheimer and the fact that Collins et al. recognize that a uniform plasma can produced with their means having no magnetic field. (Column 2 lines 29-68; Column 3 lines 1-32; Column 3 lines 58-63)

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M- Th with Every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Rodney G. McDonald
Primary Examiner
Art Unit 1753

RM
June 20, 2006